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of address as would be literally appropriate only from children of the master of the house. Many have houses and farms of their own, giving a share of the crop to the master, who can, but rarely does, claim the whole of it. Slaves can use their earnings to buy their freedom if they can accumulate enough to do so, and they are frequently owners of other slaves. They generally make their own bargains for wages if they go out as porters or domestics, and reckon with their owner themselves. The condition of the slaves is much harder, however, among the Sakalavas, in the north-east part of the island, — a tribe hostile to the Hovas, and still pagans, by an alleged treaty with whom the French have acquired those 'rights' which they have for some years been vainly endeavoring to enforce upon the Hovas. With the latter, since their conversion to Christianity, a gradual and important amelioration has taken place in the matter of slave-holding, and the families of criminals are now no longer liable to be sold into a state of servitude.

#### ASTRONOMICAL NOTES.

**The zodiacal light.** — Professor Searle of Harvard college observatory, in a paper recently published, has continued his interesting investigations on the zodiacal light. This peculiar phenomenon is supposed to be due to finely divided matter of some kind illuminated either by direct sunlight or by the result of electrical or chemical action. This matter may be only a portion of the atmosphere or of some cosmical mass more or less homogeneous, but illumination is presumed to be confined within certain limits; and the difficult task of the observer has been to attempt to define these limits. As a result of the present inquiry, there would seem to be reason to think, that after allowing for atmospheric absorption, which probably affects the apparent position largely, the zodiacal light, as seen during the second half of the nineteenth century, has had a more northern latitude near the longitude  $180^\circ$  than near the longitude  $0^\circ$ . Furthermore, from a careful study of the distribution of the stars in the Durchmusterung, Professor Searle shows, that, "upon the meteoric theory of the zodiacal light, it is to be expected that a continuous zodiacal band should be present; but the question of its actual visibility is complicated by the slight maxima of stellar density which are situated along those parts of the ecliptic most readily accessible to observation from stations in the northern hemisphere." And finally, from an examination of the elements of the first 237 asteroids, it would seem that the belt of sky

occupied by the projections of their orbits presents certain peculiarities which correspond to those of the zodiacal light, and suggest the hypothesis that the light may be partly due to minute objects circulating in orbits like those of the smaller planets.

**U. S. naval observatory.** — Vol. xxix. of the publications of the Naval observatory, now in press, will contain, in addition to the regular series of astronomical and meteorological observations for 1882, a valuable appendix by Professor Hall on the orbit of Iapetus, the outer satellite of Saturn; an appendix by Professor Harkness on the flexure of transit instruments; and a third appendix by Commander A. D. Brown, giving the observations of the partial solar eclipse of 1885 March 16, made at the observatory, and also observations made by several volunteer parties near the line where the annular phase was visible.

**Lord Rosse's observatory, Birr castle.** — We have recently received two papers communicated by the Earl of Rosse to the Royal Dublin society, and reprinted from vol. iii. (second series) of the Scientific transactions of the society. The first of these papers is a series of notes by Dr. Boeddicker, on the aspect of the planet Mars in 1884, accompanied by a lithographed plate giving thirteen sketches of the markings on the planet's surface. The second paper is also by Dr. Boeddicker, and contains the results of observations made on the changes of heat from the moon during the total eclipse of 1884 Oct. 4. From these observations it would appear that the amount of heat radiated to us from the moon itself, as distinguished from that merely reflected or diffused by it, is almost insensible; and the minimum of the heat effect falls decidedly later than the minimum of illumination.

#### NOTES AND NEWS.

For many years the exorbitant tax on salt in India has oppressed the lower classes, almost extinguishing some branches of industry. The Indian government has at last become alive to certain objections to the present rates of the salt-tax; namely, that cattle are stinted of a supply of salt, and that the same duty is charged on salt employed in manufactures or agriculture as for that used for other purposes. Experiments, for some time unsuccessful, have been prosecuted with a view of discovering a process whereby salt, while still useful for manufactures and agriculture, could be rendered unfit for human consumption. The government has now offered a reward, not exceeding five thousand rupees, to the inventor of a process satisfying the following condi-